

WHAT IS CLAIMED IS:

1 1. A method of operating an optical network coupling a plurality of nodes, comprising:  
2 providing a laser source as a network reference;  
3 distributing optical reference signals to said network nodes from said multiple wavelength laser  
4 source;  
5 providing a plurality of channels each synchronized to said reference signals; and  
6 utilizing one or more of said channels for communications from one of said nodes  
7 to at least one other one of said nodes.

1 2. A method in accordance with claim 1, comprising:  
2 selecting each channel by selecting one wavelength of a plurality of  
3 predetermined optical wavelengths of said reference signals.

1 3. A method in accordance with claim 2, comprising:  
2 further selecting each channel by selecting one modulation frequency of a  
3 plurality of predetermined modulation frequencies.

1 4. A method in accordance with claim 3, comprising:  
2 further selecting each channel by selecting one phase of a plurality of  
3 predetermined phases.

1 5. A method in accordance with claim 2, comprising:  
2 further selecting each channel by selecting by one phase of a plurality of predetermined phases.

1 6. A method in accordance with claim 1, comprising:  
2 utilizing one or more multiple wavelength lasers as said laser source.

1 7. A method in accordance with claim 6, comprising:  
2 selecting each channel by selecting one wavelength of a plurality of  
3 predetermined optical wavelengths of said reference signals.

- 1 8. A method in accordance with claim 7, comprising:  
2 further selecting each channel by selecting one modulation frequency of a  
3 plurality of predetermined modulation frequencies.
- 1 9. A method in accordance with claim 8, comprising:  
2 further selecting each channel by selecting one phase of a plurality of  
3 predetermined phases.
- 1 10. A method in accordance with claim 7, comprising:  
2 further selecting each channel by selecting one phase of a plurality of  
3 predetermined phases.
- 1 11. A method in accordance with claim 1, comprising:  
2 combining the outputs of a plurality of lasers to provide said laser source.
- 1 12. A method in accordance with claim 11, comprising:  
2 utilizing a plurality of multiple wavelength lasers as said plurality of lasers.
- 1 13. A method of operating an optical communications system comprising a plurality of  
2 nodes, said method comprising:  
3 providing a plurality of channels;  
4 selecting each channel by selecting one wavelength from a predetermined  
5 plurality of wavelengths and by selecting one modulation frequency from a plurality of  
6 modulation frequencies;  
7 assigning selected ones of said channels for communications from one node of  
8 said plurality of nodes to at least another node of said plurality of nodes;  
9 synchronizing said channels to optical reference signals; and  
10 providing a said optical reference signals from a source common to all of said  
11 plurality of nodes.

1 14. A method in accordance with claim 13, comprising:  
2 providing a laser source as said common source.

1 15. A method in accordance with claim 14, comprising:  
2 utilizing a plurality of lasers as said laser source.

1 16. A method in accordance with claim 13, comprising:  
2 further selecting each channel by selecting one phase from a plurality of  
3 predetermined phases.

1 17. An optical communications system comprising:  
2 an optical network;  
3 a plurality of nodes, each node of said plurality of nodes being coupleable to said  
4 network for exchanging information with other nodes of said plurality of nodes, said information  
5 being transmitted over communication channels, each channel having a wavelength selected  
6 from a predetermined plurality of wavelengths;  
7 apparatus at each said node for synchronizing said channels to optical reference  
8 signals; and  
9 a source of said optical reference signals, said source being common to all of said  
10 plurality of nodes.

1 18. An optical communication system in accordance with claim 17, wherein:  
2 said source comprises a laser source.

1 19. An optical communication system in accordance with claim 18, wherein:  
2 said laser source comprises a multiple wavelength laser source.

1 20. An optical communication system in accordance with 19, wherein:  
2 said laser source comprises a plurality of multiple wavelength lasers.